## CLAIM AMENDMENTS

1. (currently amended) A method for hyperpolarizing atomic nuclei through optical pumping in a ~~test~~ optical pumping cell having an inlet and an outlet spaced therefrom, ~~whereby~~ polarization of an electron spin of an optically pumpable species in a mixture created by ~~means of a~~ laser light [[is]] being transferred to the nuclear spin of an atom to be hyperpolarized, ~~characterized in that~~ the method comprising the steps of:

feeding components of the mixture ~~and/or for the hyperpolarization of inert compounds are guided~~ through the inlet into the ~~test~~ optical pumping cell as a jet flow, drawing the mixture out of the cell through the outlet such that the mixture ~~does not~~ touches the inner walls of the ~~test~~ optical pumping cell only immediately adjacent the outlet, and passing the mixture further on outside the cell for enrichment.

2. (currently amended) The method according to claim 1 ~~characterized in that~~ wherein the ~~mixture~~ jet flow is inclined in the direction of flow ~~, especially~~ at an acute [[45°]] angle to [[the]] side wall of the cell [[,]] when ~~guided~~ fed into the ~~test~~ optical pumping cell.

3. (canceled)

4. (currently amended) The method according to claim 1, ~~whereby a bypass flow consisting of~~ further comprising the step of feeding a compound for the separation of the mixture from the inner walls ~~is guided~~ into the ~~test~~ optical pumping cell.

5. (currently amended) The method according to claim 1~~,~~ ~~characterized in that~~ wherein the laser light is radiated into the ~~test~~ optical pumping cell perpendicular [[ly]] to the ~~direction of~~ jet flow ~~of the mixture flowing~~ in the ~~test~~ optical pumping cell.

6. (currently amended) The method according to claim 1~~,~~ ~~characterized in that~~ wherein the laser light is radiated into the ~~test~~ optical pumping cell [[in a]] countercurrent to the ~~direction of~~ jet flow ~~of the mixture flowing~~ in the ~~test~~ optical pumping cell.

7. (currently amended) The method according to claim 1~~,~~ ~~characterized in that~~ wherein the mixture is disengaged ~~at the point~~ where the intensity of the laser is largest.

8. (currently amended) The method according to claim 1, ~~characterized in that~~ further comprising the step of cooling the walls of the ~~test~~ optical pumping cell ~~are cooled~~.

9. (currently amended) The method according to claim 1~~,~~ ~~characterized in that~~ wherein the spin exchange is transferred indirectly via a non-optically pumpable species to the nuclear spin of a nucleus to be hyperpolarized.

10. (currently amended) The method according to claim 1 ~~, whereby~~ wherein $^{129}Xe$, $^{3}He$ or $^{13}CO_2$ are hyperpolarized.

11. (currently amended) An apparatus for implementing the method according to claim 1, ~~characterized by~~ the apparatus comprising:

a cylindrical optical pumping cell having an inlet and an outlet spaced therefrom;

a supply of ~~at least one means for feeding into the test cell the components of the~~ a mixture [[out]] of optically pumpable species and hyperpolarizable nuclei connected to the inlet of the cell; and ~~/or other compounds inert to hyperpolarization~~

nozzle means at an inlet of the optical pumping cell for forming and injecting a jet flow of the mixture into the optical pumping cell and for drawing it out through the outlet such that the mixture ~~does not~~ touches the inner walls of the ~~test~~ optical pumping cell only adjacent the outlet and for passing the mixture from the outlet on for enrichment.

12. (currently amended) The apparatus according to claim 11~~, characterized in that~~ wherein the inlet [[and/]] or the outlet forms a predetermined acute angle to the longitudinal axis of the ~~test~~ optical pumping cell ~~, in particular 45°~~.

13. (canceled)

14. (currently amended) The apparatus according to claim 11~~, characterized in that~~ wherein the means forms a free column for injecting the mixture into the ~~test~~ optical pumping cell.

15. (currently amended) The apparatus according to claim 11~~, characterized in that~~ wherein the means is a surrounding stream for the mixture.

16. (currently amended) The apparatus according to claim 11~~, characterized in that~~ wherein at least one laser is set such that the laser beam is oriented perpendicular and/or countercurrent to the flow of the mixture in the ~~test~~ optical pumping cell.

17. (currently amended) The apparatus according to claim 11~~, characterized in that~~ wherein the input window or windows of the ~~test~~ optical pumping cell have for the laser beam the

greatest possible spacing from the input of the ~~test~~ optical pumping cell for the optically pumpable species.

18. (currently amended) The apparatus according to claim 11, ~~characterized by the provision of~~ further comprising:

at least one supply container for a chemical species.

19. (currently amended) The apparatus according claim 11~~, characterized in that~~ wherein the supply container is mounted in the supply line(s) of the apparatus.

20. (currently amended) The apparatus according to claim 11, ~~characterized by~~ further comprising:

means for cooling walls of the ~~test~~ optical pumping cell.

21. (new) The apparatus according to claim 11 wherein the cylindrical cell is centered on an axis, the inlet opening into the cell at the axis and the outlet opening radially into the cell offset from the axis.